

90147



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA



National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Level 1 Mathematics, 2003

90147 Use straightforward algebraic methods and solve equations

Credits: Three
2:00 pm Wednesday 19 November 2003

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

Show ALL working.

If you need more space for any answer, use the page provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–8 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Achievement Criteria			For Assessor's use only		
Achievement		Achievement with Merit		Achievement with Excellence	
Use straightforward algebraic methods and solve equations.	<input type="checkbox"/>	Use algebraic methods and solve equations in context.	<input type="checkbox"/>	Use algebraic strategies to investigate and solve problems.	<input type="checkbox"/>
Overall Level of Performance			<input type="checkbox"/>		

You are advised to spend 25 minutes answering the questions in this booklet.

Assessor's
use only

Going Flatting

Show **ALL** working.

QUESTION ONE

Simplify:

$$3x^4 \cdot 2x^3$$

QUESTION TWO

Expand and simplify:

$$5(x + 1) + 2(x - 3)$$

QUESTION THREE

Josh is estimating the area of a circle by using $A = 3r^2$.

What is the area if $r = 5$ cm?

QUESTION FOURAssessor's
use only

Josh is sponsoring a World Vision child.
He sets up a table to show a plan for his donations.
He increases his donations by \$2 **each month**.
Here is the table that Josh has started to fill in that shows his donations.

Month (m)	Donations (D)
1	
2	
3	\$12
4	
5	\$16
6	
7	
8	

Write a rule for the amount Josh donates after m months.

QUESTION FIVEAssessor's
use only

Solve the following equations.

(a) $2x(x + 3) = 0$

 $x =$

(b) $3x + 5 = x + 6$

 $x =$

(c) $\frac{2x}{3} = \frac{7}{2}$

 $x =$

QUESTION SIXAssessor's
use only

Simplify:

$$\frac{x^2 + 5x + 6}{x + 3}$$

QUESTION SEVEN

Josh's mum gives him \$76 to use when he phones her during the year.

Josh wants to have at least \$30 left at the end of July.
Each phone call costs him \$3.75.

Solve the following inequality to find out the maximum number of phone calls Josh can make before the end of July, where **x is the number of phone calls**.

$$76 - 3.75x \geq 30$$

Maximum number of phone calls (x) = _____

Josh bought mini pizzas for his flat one night.

The total cost for two Hawaiian pizzas and three Supreme pizzas was \$20.75.

Solve the following pair of simultaneous equations to find the price of one Supreme pizza.

$$\begin{aligned} 3s + 2h &= 20.75 \\ s &= h + 0.50 \end{aligned}$$

Show all working.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Price of one Supreme pizza =

Use correct mathematical statements.

[illegible]

**Extra paper for continuation of answers if required.
Clearly number the question.**

*Assessor's
use only*

Question
Number

[illegible]